

41. (Amended) A UPS system for providing backup power to a load, the system comprising:

a plurality of battery packs, each pack including a plurality of series-coupled batteries, the plurality of battery packs being coupled in parallel;

power means for selectively coupling power from a main power source to the load and from the plurality of battery packs to the load;

monitor means coupled to each battery pack for acquiring pack data associated with each battery pack, processing the pack data, and transmitting the processed pack data; and

UPS processing means coupled to the monitor means and configured to receive the processed pack data from the monitor means.

REMARKS

In response to the Office Action dated December 19, 2001, Applicants respectfully request reconsideration.

Claims 1-23 stand rejected for obviousness-type double patenting in view of U.S. 6,274,950 B1. Claims 1-23 have been canceled without prejudice, rendering the double-patenting rejection moot.

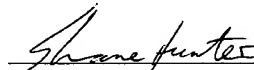
Claims 1-23 further stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 5,315,533 (Stich) in view of U.S. 5,281,955 (Reich) and U.S. 5,047,961 (Simonsen) and U.S. 4,673,826 (Masson). Claims 1-23 have been canceled without prejudice, rendering the rejection of claims 1-23 over Stich in view of Reich, Simonsen, and Masson moot.

Claims 24-49 are patentable over Stich in view of Reich, Simonsen, and Masson. The Examiner asserts that Stich teaches monitoring a single battery 47 and passing monitored battery information to a UPS controller 66. The Examiner further asserts that Simonsen teaches that standby batteries come in parallel strings and that a battery monitor may be provided for each string. Also, the Examiner asserts that Reich and Masson teach the desirability of monitoring various parameters of batteries. The cited

references, however, fail to teach, disclose, or suggest, alone or in combination, a battery monitor processor and a UPS processor as recited in independent claim 24, or monitor means and UPS processing means as recited in independent claim 41. Further, Stich, Reich, Simonsen, and Masson do not, alone or in combination, teach, disclose, or suggest a battery monitor configured to obtain and process battery information, and to transmit the processed battery information to an output port adapted to couple to a main processor of a UPS system, as recited in independent claim 44. Claims 25-40, 42-43, and 45-49, being directly or indirectly dependent upon claims 24, 41, and 44, respectively, are patentable over Stich in view of Reich, Simonsen, and Masson for at least the reasons noted above for the respective independent claims.

Based on the foregoing, this application is believed to be in allowable condition, and a notice to that effect is respectfully requested. To answer any questions, or otherwise further the prosecution of this application, the Examiner may contact the undersigned attorney at the number provided below.

Respectfully submitted,



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AMENDED CLAIMS WITH EDITING MARKS

24. (Amended) A UPS system for providing backup power to a load, the system comprising:

a plurality of batteries coupled in parallel;

at least one battery monitor processor configured to receive signals indicative of battery status of each of the plurality of batteries, to process the signals indicative of battery status, and to transmit monitor data indicative of characteristics of the plurality of batteries;

a UPS processor coupled to the at least one battery monitor processor and configured to receive monitor data from the at least one battery monitor processor; and

a backup-power circuit coupled to the UPS processor and configured to couple one of a main power source and the plurality of batteries to the load.

41. (Amended) A UPS system for providing backup power to a load, the system comprising:

a plurality of battery packs, each pack including a plurality of series-coupled batteries, the plurality of battery packs being coupled in parallel;

power means for selectively coupling power from a main power source to the load and from the plurality of battery packs to the load;

monitor means coupled to each battery pack for acquiring pack data associated with each battery pack, processing the pack data, and transmitting the processed pack data; and

UPS processing means coupled to the monitor means and configured to receive the processed pack data from the monitor means.

CLAIMS AS PENDING AS OF JANUARY 14, 2002, INCLUDING
PROPOSED CLAIM AMENDMENTS

24. (Amended) A UPS system for providing backup power to a load, the system comprising:

a plurality of batteries coupled in parallel;

at least one battery monitor processor configured to receive signals indicative of battery status of each of the plurality of batteries, to process the signals indicative of battery status, and to transmit monitor data indicative of characteristics of the plurality of batteries;

a UPS processor coupled to the at least one battery monitor processor and configured to receive monitor data from the at least one battery monitor processor; and

a backup-power circuit coupled to the UPS processor and configured to couple one of a main power source and the plurality of batteries to the load.

25. The system of claim 24 wherein the plurality of batteries comprises at least two groups of batteries, the groups being coupled in parallel, and wherein a battery monitor processor of the at least one battery monitor processor is coupled to the at least two groups of the batteries and is configured to receive signals indicative of status of each of the batteries in the at least two groups.

26. The system of claim 24 wherein the plurality of batteries includes a plurality of battery packs coupled in parallel, and wherein the at least one battery monitor processor includes at least two battery monitor processors each coupled to at least two parallel-coupled battery packs and each configured to receive signals indicative of status of each of the respective battery packs.

27. The system of claim 26 wherein each of the battery packs includes multiple of the batteries coupled in series.

28. The system of claim 27 wherein the battery packs include respective service indicators that, when actuated, indicate a status of the associated battery pack, and wherein each of the at least two battery monitor processors is configured to actuate the service indicators in accordance with the received signals indicative of status of each of the battery packs.

29. The system of claim 28 wherein the service indicators include light-emitting diodes.

30. The system of claim 24 wherein the at least one battery monitor processor is configured to produce packets of data in accordance with the signals indicative of battery status of the plurality of batteries, and to transmit the packets of data to the UPS processor.

31. The system of claim 24 further comprising a UPS housing containing the UPS processor, wherein the plurality of batteries are disposed external to the UPS housing.

32. The system of claim 24 further comprising:
a UPS housing containing the UPS processor; and
a display visible from outside the housing, the display coupled to receive output information from the UPS processor and to display indicia of the output information.

33. The system of claim 24 wherein the at least one battery monitor processor is configured to determine the monitor data from charging currents, discharging currents, and voltages associated with associated batteries.

34. The system of claim 24 wherein the plurality of batteries includes a plurality of parallel coupled battery packs in an array of battery packs, each pack including a plurality of batteries coupled in series, and wherein the UPS processor is

configured to process the monitor data to determine a total number of battery packs in the array.

35. The system of claim 24 wherein the plurality of batteries includes a plurality of parallel-coupled battery packs in an array of battery packs, each pack including a plurality of batteries coupled in series, and wherein the UPS processor is configured to process the monitor data to determine a number of battery packs in the array that are within requirements for overnight shipping by at least one courier service.

36. The system of claim 24 wherein the plurality of batteries includes a plurality of parallel-coupled battery packs in an array of battery packs, each pack including a plurality of batteries coupled in series, and wherein the UPS processor is configured to process the monitor data to determine a number of battery packs for which service is desirable.

37. The system of claim 24 wherein the plurality of batteries includes a plurality of parallel-coupled battery packs in an array of battery packs, each pack including a plurality of batteries coupled in series, and wherein the UPS processor is configured to process the monitor data to determine a number of battery packs that are at a float voltage.

38. The system of claim 24 wherein the plurality of batteries includes a plurality of parallel-coupled battery packs in an array of battery packs, each pack including a plurality of batteries coupled in series, and wherein the UPS processor is configured to process the monitor data to determine a number of battery packs that are at an overtemperature.

39. The system of claim 24 wherein the plurality of batteries includes a plurality of parallel-coupled battery packs in an array of battery packs, each pack including a plurality of batteries coupled in series, and wherein the UPS processor is

configured to process the monitor data to determine a number of battery packs that are being charged.

40. The system of claim 24 wherein the plurality of batteries includes a plurality of parallel-coupled battery packs in an array of battery packs, each pack including a plurality of batteries coupled in series, and wherein the UPS processor is configured to process the monitor data to determine a number of battery packs that are substantially fully capable of delivering power to the load.

41. (Amended) A UPS system for providing backup power to a load, the system comprising:

a plurality of battery packs, each pack including a plurality of series-coupled batteries, the plurality of battery packs being coupled in parallel;

power means for selectively coupling power from a main power source to the load and from the plurality of battery packs to the load;

monitor means coupled to each battery pack for acquiring pack data associated with each battery pack, processing the pack data, and transmitting the processed pack data; and

UPS processing means coupled to the monitor means and configured to receive the processed pack data from the monitor means.

42. The system of claim 41 further comprising alarm means coupled to the monitor means for indicating that a battery pack of the plurality of battery packs associated with an alarm is in need of servicing.

43. The system of claim 41 further comprising:

a UPS housing containing the UPS processor; and

display means coupled to the UPS housing for displaying indicia of the processed pack data processed by the UPS processor.

44. A power source for use with a UPS system, the power source comprising:

a plurality of series-connected batteries configured to be coupled in parallel to at least another plurality of series-connected batteries;

a battery housing configured to hold the plurality of series-connected batteries;
and

a battery monitor coupled to the batteries and configured to obtain battery information relating to the batteries, to process the battery information, and to transmit the processed battery information to an output port adapted to couple to a main processor of the UPS system.

45. The power source of claim 44 further comprising an alarm configured to receive an alarm signal from the battery monitor and to actuate in response to the alarm signal.

46. The power source of claim 45 wherein the alarm comprises a visible indication.

47. The power source of claim 46 wherein the alarm comprises an LED disposed adjacent to a window of the battery housing.

48. The power source of claim 44 wherein the battery monitor is further configured to couple to other battery monitors associated with other power sources coupled in parallel to the power source of claim 1, the battery monitor being configured to transmit the processed battery information to an adjacently coupled other power source and to receive processed battery information from another adjacently coupled other power source.

49. The power source of claim 48 wherein the battery monitor is configured to transmit the received processed battery information from the another adjacently coupled other power source to the adjacently coupled other power source.